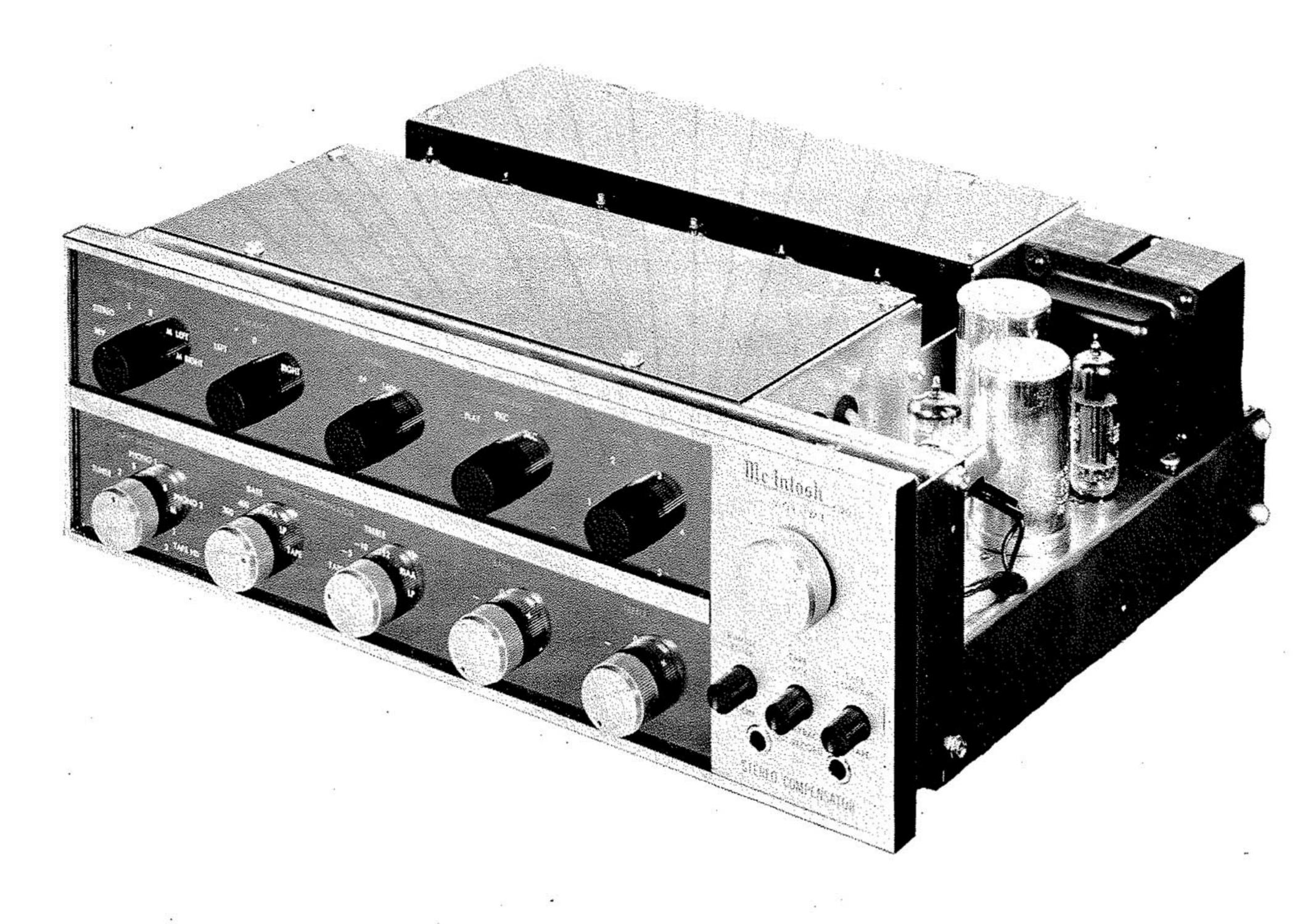
MCINTOSH MODEL C20



TRADE NAME

McIntosh Model C20

MANUFACTURER

McIntosh Laboratory Inc., 2 Chambers Street, Binghamton, N. Y.

TYPE SET

AC Operated 8 Tube Stereo Amplifier

POWER SUPPLY

110-120 Volts AC, 60 Cycles

RATING

38 Watts, . 38 Amp. @ 117 Volts AC

PARTS LIST AND DESCRIPTIONS

TUBES

1-	CBS	GENERAL ELECTRIC	•		RAYTHEON •	SYLVANIA •
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE
V1 V2	Left Channel Preamp. Left Channel Cathode Follower - AF Amp.	ECC83/12AX7 ECC82/12AU7	1	V5 V6	Right Channel Preamp. Right Channel Cathode Follower - AF Amp.	ECC83/12AX7 ECC82/12AU7
V3 V4	Left Channel AF Amp. Left Channel Cathode Follower - Right Channel Cathode Follower	ECC83/12AX7		V7 V8	Right Channel AF Amp. Rectifier	ECC 83/12AX7 6X4

^{*} Alternate

ELECTROLYTIC CAPACITORS

	RAT	ING		340441111111111111111111111111111111111	REPLA	CEMENT DATA			
No.	CAP.	VOLT.	McINTOSH PART No.	AEROVOX PART No.	CORNELL- DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
ClA	4 0	350	\$1.72	AFH2-40	B0320	FP176	TMD-38	TVL-2630	
В	A40	350	13			TC78			
C2A	-40	350		AFH4-04	D0032	FP420.35	TMT-34	TVL-4635	
В	20	350			The latest seemed a	Section and the	TD-40-350	4	
C	A 20	300	8						10*13
D	20	300	7				112000000000000000000000000000000000000	STREET, IN THE STREET, AND THE	
C3	2000	15		AFH1-03	A0070	WP041	TMS-5	TVL-1168	
C4	50	3		SRE3V50	BBR 50-3	TT6X50	TD-50-6	TVA-1100	
C5	50	3		SRE3V50	BBR50-3	TT6X50	TD-50-6	TVA-1100	
C6	50	3		SRE3V50	BBR50-3	TT6X50	TD-50-6	TVA-1100	
C7	50	3		SRE3V50	BBR50-3	TT6X50	TD-60-6	TVA-1100	

FIXED CAPACITORS
Capacity values given in the rating column are in mfd. for Paper
Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

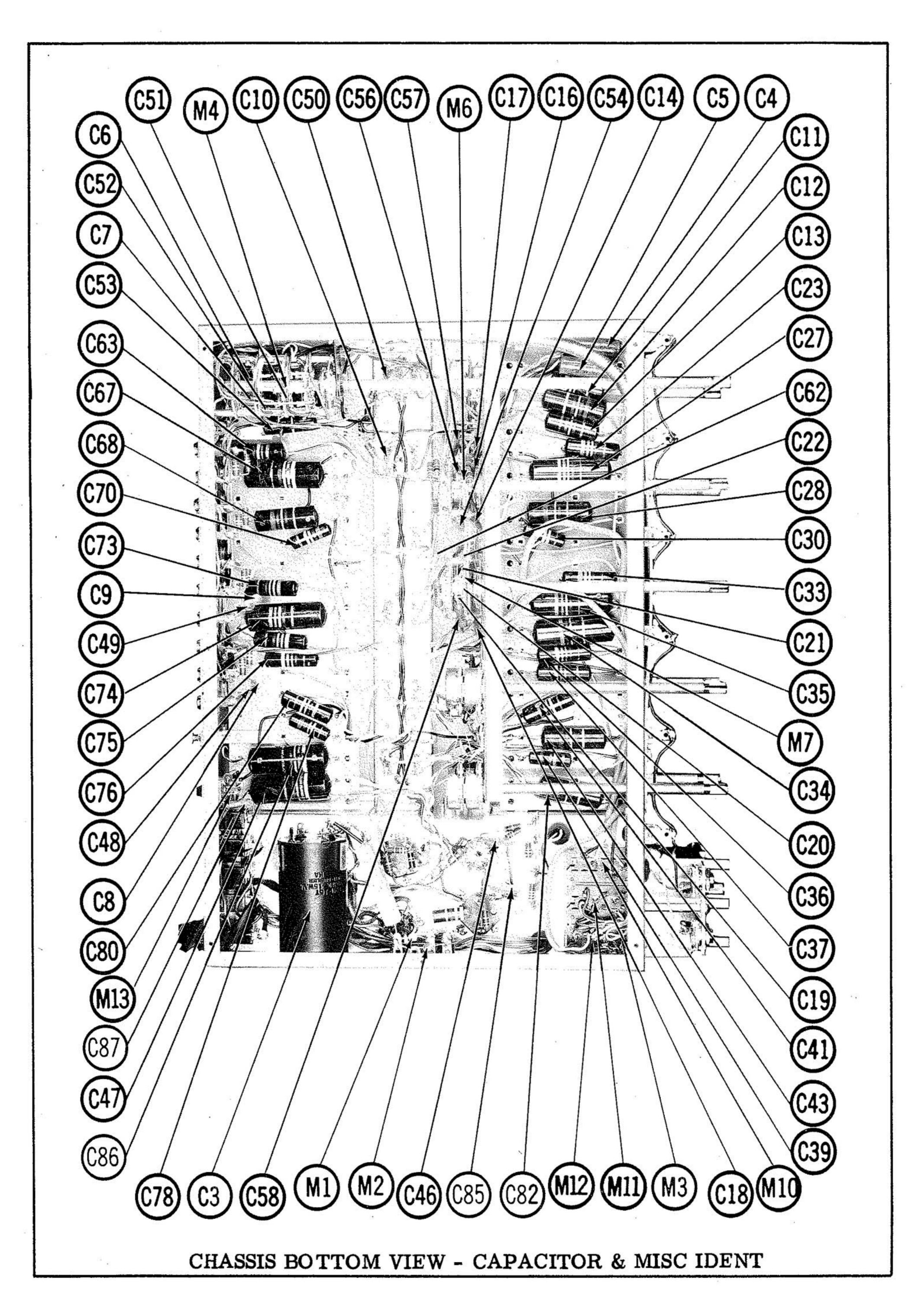
	(5)				341	REPLACE	MENT DATA		10 10
No.	RATING	3	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL- DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	220	V	123111220	DI-220	DD-221	L10T22	CCD-221	GP322	5GA~T22
C9	220			DI-220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C10	39		1	DI-39	DD-390	L10Q39	CCD-390	GP439	5GA-Q39
CII	.033 400V			P488N-033	DD-303	CUB4S33	4DP-2-333	GEM-4133	4TM-S33
C12	.1 400V			P488N-1	DF-104	CUB4Pl	4DP-3-104	GEM-401	4TM-Pl
C13	.1 200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-Pl
C14	500	5%		1469-0005		5R5T5	CM-19B-501J	MCE245	MS-35
C15	1800	5% 5% 5%		1464-0018		IR5D18	CM-19B-182J	MCJ456.5	MS-218
C16	2200	5%		1464-0022		IR5D22	CM-19B-222J	MCJ459	MS-222
C17	3000	5%		1464-003		1R5D3	CM-19B-302J	MCE 461	MS-23
C18	560	5% 5% 5% 5% 5% 5%		1469-00056		1R5T56	CM-19B-561J	MCJ247	MS-356
C19	430	5%	l	1469-00043		5R5T43	CM-19B-431J	47	MS-343
C20	360	5%		1469-00036		22R5T36	CM-19B-361J		MS-336
C21	300	5%		1469-0003	TCZ-300	22R5T3	CM-19B-301J	MCE 241	MS-33
C22	180	5%		1469-00018	TCZ-180	22R5T18	CM-19B-181J	CNO-318	MS-318
C23	.022 200V			P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C24	100			SI 100	D6-101	L10T1	CCD-101	GP310	5GA-T10
C25	1500	10%		DI-1500	DD-152	1R5D15	CCD-152	GP215	10TS-D15
C26	750	10%		.DI-750	DD-751	IR5T75	CCD-751	GP375	10TS-T75
C27	.47 200V	110000		P288N-47	ANGERS SHORES N	CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C28	.1 400V		Ĉ	P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-Pl
C29	4700		ls .	BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C30	.01 200V	10%		V84C2S1-10%	SAME OF	PM4S1	4DP-1-103	GEM1611	4TM-S1
C31	4700	10%		DI-4700	The state of	PM6D47	CCD-472	JL-247	10TS-D47
C32	4700	10%		DI-4700		PM6D47	CCD-472	JL-247	10TS~D47
C33	.022 200V	MS003307		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22

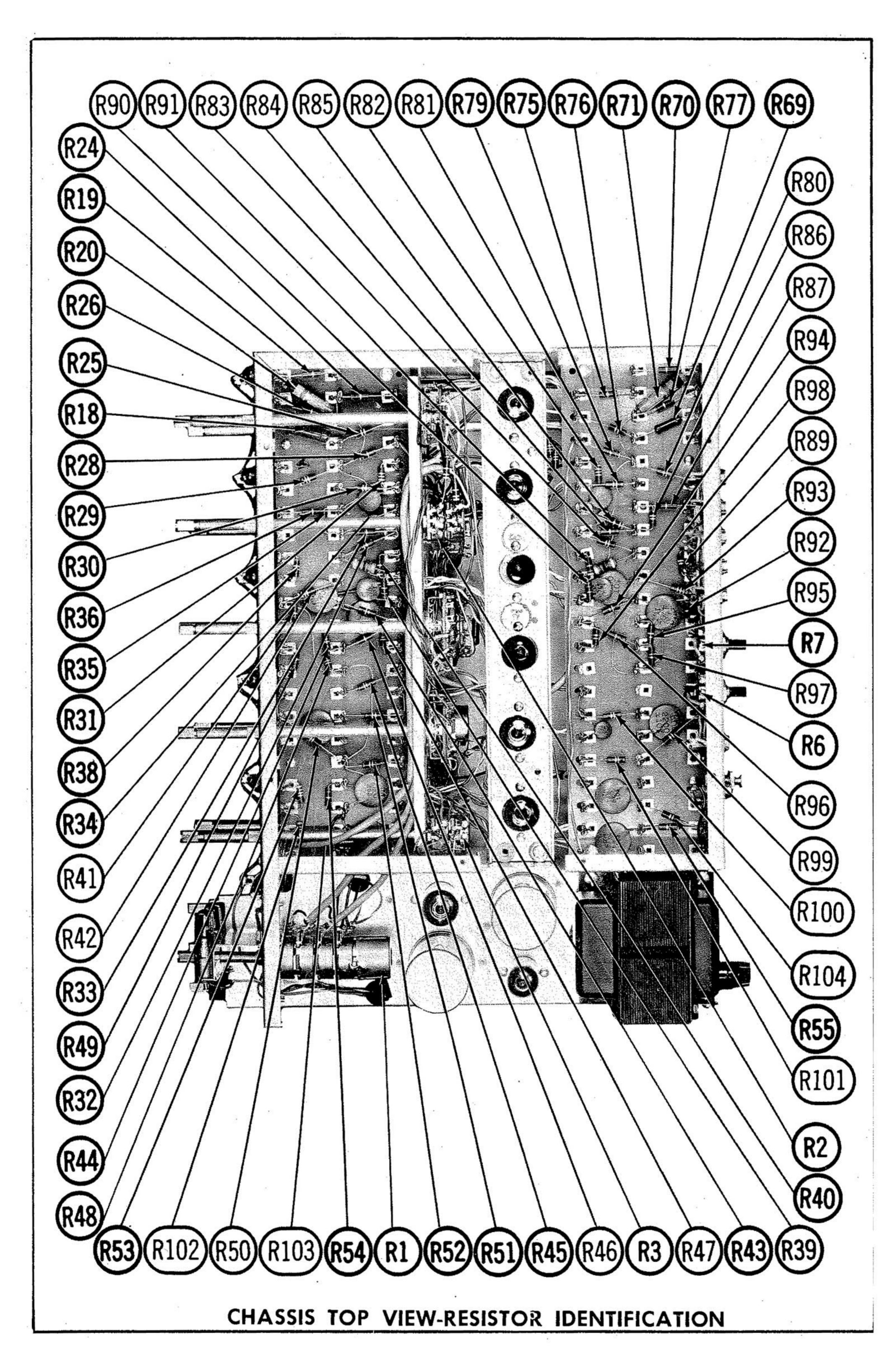
FIXED CAPACITORS (cont)

			TIXED C			MENT DATA	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
ITEM	51500	DELLARVO			CORNELL-		I	CODACUE
No.	RATING	REMARKS	PART No.	PART No.	DUBILIER PART No.	PART No.	MALLORY PART No.	SPRAGUE PART No.
004	. 22 400V				CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C34			P488N-22 P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C35	. 22 200V	Ì	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C36	.047 200V	i	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C37	.047 200V		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C38	1000 10% . 01 200V 10%		V84C2S1-10%	00-102	PM4S1	4DP-1-103	GEM-1611	4TM-Sl
C39 C40	2200 10%	l	DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C41	.022 200V 10%	Î	V84C2S22-10%		PM4S22	4DP-2-223	GEM-16122	2TM-S22
C42	6800		BPD-0068	DD-682	BYA10D68	CCD-682	GP268	5HK-D68
C43	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-Pl
C44	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C45	6800 10%	1	DI-6800	N	PM6D68	CCD-682	GEM-16268	10TS-D68
C46	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C47	. 47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C48	220		DI-220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C49	220		DI-220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C50	39		DI-39	DD~390	L10Q39	CCD-390	GP439	5GA-Q39
C51	.033 400V	•	P488N-033	DD- 03	CUB4S33	4DP-2-333	GEM-4133	4TM-S33
C52	.1 400V		P488N-1	DF-104	CUB4Pl	4DP-3-104	GEM-401	4TM-Pl
C53	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-Pl
C54	500 5% 1800 5%		1469~0005			CM-19B-501J	MCE245	MS-35
C55	1800 5%		1464-0018			CM-19B-182J	MCJ456.5	MS-218
C56	2200 5%		1464-0022			CM-19B-222J	MCJ459	MS-222
C57	3000 5%		1464-003		1R5D3	CM-19B-302J	MCE 461	MS-23
C58	560 5%		1469-00056			CM-19B-561J	MCJ247	MS-356
C59	2200 5% 3000 5% 560 5% 430 5% 360 5% 300 5% 180 5%	l°	1469-00043		: [1] [1] [1] [1] [1] [1] [1] [1] [1] [1]	CM-19B-431J		MS-343
C60	360 5%		1469-00036	TO 7 200		CM-19B-36IJ	MCE241	MS-336
C61	300 5%	di .	1469-0003	TCZ-300		CM-19B-301J CM-19B-181J	CNO-318	MS-33 MS-318
C62		9	1469-00018 P288N-022	TC Z-180 DD-203	22R5T18 CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C63	.022 200V 100		SI 100	D6-101	LIOTI	CCD-101	GP310	5GA-T10
C65	1500 10%		DI-1500	DD-152	IR5DI5	CCD-152	GP215	10TS-D15
C66	750 10%		DI-750	DD-751	1R5T75	CCD-751	GP375	10TS-T75
C67	.47 200V		P288N-47	22 101	CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C68	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-Pl
C69	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GO247	5HK-D47
C70	.01 200V 10%		V84C2S1-10%	74	PM4S1	4DP-1-103	GEM-1611	4TM-Sl
C71	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C72	4700 10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C73	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C74	. 22 200V	FE	P288N-22	A-50008 00000000	CUB2P22	2DP-5-224	GEM-2022	2TM-P22
C75	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C76	.047 200V	Į.	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C77	1000 10%		DI-1000	DD-102	PM6Dl	CCD-102	GP210	10TS-D10
C78	.01 200V 10%	91	V84C2S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-Sl
C79	2200 10%		DI-2200		PM6D22	CCD-222	GP222 GEM-16122	10TS-D22
C80	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GP268	2TM-S22 5HK-D68
C81	6800	O+9	BPD-0068	DD-682	BYA10D68	CCD-682 4DP-3-104	GEM-401	4TM-Pl
C82	.1 400V		P488N-1	DF-104 DD-221	CUB4P1 L10T22	CCD-221	GP322	10TS-T22
C83	220 10%		DI-220 DI-6800	DD-221	PM6D68	CCD-682	GEM-16268	10TS-D68
C84	6800 10%		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C85	20000	1	P288N-47	DD-200	CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C86 C87A	.47 200V 5000		1 20011-21		500 SANGEROS	CCD-502		
0.000			BPD-2X0047	DD3-502	BYD6DD5	CCD-502	B2X250	5HK-2D47
В	5000					CCD-002		

CONTROLS

ITEM	RATI	NG .	100	REF	-			
No.	RESIST- ANCE	WATTS	McINTOSH PART No.	PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
RIA B C D	100K 100K 1meg 1meg Swltch	1 34 N A N A N A	C202-R4	223 417				Volume, Right Channel Volume, Left Channel Volume, Left Channel Volume, Right Channel





PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

	DATI	NC		RE	PLACEMENT DA	TA		
No.	RATING		Mc INTOSH	CENTRALAB	CLAROSTAT	CTS-IRC	MALLORY	INSTALLATION NOTES
	RESIST- ANCE	WATTS		PART No.	PART No.	PART No.	PART No.	INSTALLATION NOTES
R2A B	500K 500K	1212	C202-R3	B-59 SR-59 *			<u>E</u>	Aural Comp., Left Channel Aural Comp., Right Chan.
R3A B	300K	1 2 2	C202-R5					Balance, Left Channel Balance, Right Channel
R4A B	lmeg lmeg	1 1 2	C202-R1	B-70 SR-70 *		44		Bass, Left Channel Bass, Right Channel
R5A B	250K 250K	1 1 2	C202-R2	B-51 SR-51 *		5322	30	Treble, Left Channel Treble, Right Channel
R6A B	100K Shaft	1/2	C202-R6-7	BX-40 Not Req.	A47-100K-S FKS-1/4	Q11-128 Not Req.	U41 Not Req.	Low Freq. Trim, Left Chan
R7A B	100K Shaft	1/2	C202-R6-7	BX-40 Not Req.	A47-100K-S FKS-1/4	Q11-128 Not Req.	U41 Not Req.	Low Freq. Trim, Right Channel

* Use Coupler AK-16

TRANSFORMER (POWER)

l Vanantuuru		CARRO VICTORIA MARI				REPLAC	EMENT DATA	\		
No.	RATING		McINTOSH	Halldorson	Merit	Ram	Stancor	Thordarson	Triad	
100.55	PRI.	SEC. 1	SEC. 2	PART Na.	PART No.	PART No.	PART No.	PART No.	PART No.	PART No.
Tl	117V ② .38A	680VCT ② .012A	6.3V ② 1.3A	M-199					0	
	SEC. 3	SEC. 4	SEC. 5					*		
	25VCT ② 1.1A			e						

RECTIFIERS

				TITLE IERO			
	RATING		REPLAC	EMENT DATA			
No.	CURRENT (Measured)	McINTOSH PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1 M2	1. LA 1. LA	• 0 0	1		F-2 ① F-2 ①		① Silicon Type

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

No.	RATING	REMARKS	No.	RATING	REMARKS		No.	RATINO
R8	220K	(120K) *	R44	200K	Note 1]	R80	470K
R9	56K	, ,	R45	22K		1	R81	100 K
RIO	1000Ω	Note 1	R46	1000Ω			R82	33K
RII	220K	(120K) *	R47	22K		1	R83	100K
R12	56K	1	R48	22K			R84	lmeg
R13	1000Ω	Note 1	R49	2. 2 meg			R85	3300Ω
Rl4	220K	(120K) *	R50	22K			R86	100K
R15	220K	(120K) *	R51	100K		1	R87	2. 2meg
RI8	56K	(lmeg) *	R52	10K		1	R88	3300℃
R17	1500Ω	(1200Ω) *	R53	330K		1	R89	100K
R18	330K	Note 1	R54	1800Ω			R90	1800Ω
RI9	2200Ω		R55	22K		1	R91	4.7meg
R20	1800Ω IW	Note 1	R56	lmeg			R92	10meg
R21	lmeg	1,000	R57	680Ω		1	R93	330K
R22	3.9meg		R58	47K		1	R94	200K
R23	22 meg	1	R59	220K	(120K) *	1 .	R95	200K
R24	lmeg		R60	56K			R98	1000Ω
R25	100K	1	R61	1000Ω	Note 1	1	R97	22K
R26	2200Ω		R62	220K	(120K) *	1	R98	22K
R27	180K	Note 1	R63	56K	X		R99	22K
R28	4.7 meg		R64	1000Ω	Note 1	1	R100	100 K
R29	470K		R65	220K	(120K) *	1	R101	10K
R30	100 K		R66	220K	(120K) *		R102	330K
R31	33K	1	R67	56K	(lmeg) *		R103	1800Ω
R32	100K		R68	1500Ω	(1200Ω) *	1	R104	22K
R33	lmeg		R69	330K	Note 1	4	R105	lmeg
R34	3300Ω	j	R70	2200Ω			R106	680 ñ
R35	100K		R71	1800Ω IW	Note 1	1	R107	47K
R36	2.2 meg		R72	lmeg	,	1	R108	10K
R37	3300Ω	Note 2	R73	3.9meg		1 .	R109	4700Ω
R38	100K	1.000.2	R74	22meg		1. ^	R110	2200Ω
R39	1800Ω	1	R75	lmeg			RIII	1800Ω
R40	4. 7meg		R76	100K			R112	1800Ω
R41	10meg		R77	2200Ω		1	R113	3300Ω
R42	330K		R78	180K	Note 1		Rl14	2Ω 10
R43	200K	Note 1	R79	4.7meg			RU5	10Ω IW

Note 1. Select for low noise and close tolerance.

Note 2. Not used in some versions.

	R87	z. zmeg	
	R88	3300Ω	Note 2
	R89	100 K	
	R90	1800Ω	
	R91	4.7meg	
	R92	10meg	
	R93	330K	
	R94	200K	No te 1
60	R95	200K	Note 1
	R98	1000Ω	
	R97	22K	1.
	R98	22K	
	R99	22K	
	R100	100 K	
	R101	10K	1
	R102	330K	
	R103	1800Ω	8
	R104	22K	
	R105	lmeg	
	R106	680Ω	
	R107	47K	
	R108	10K	
*	R109	4700Ω	8
	R110	2200Ω	
	RIII	1800Ω	1

* Alternate Value

REMARKS

FUSES

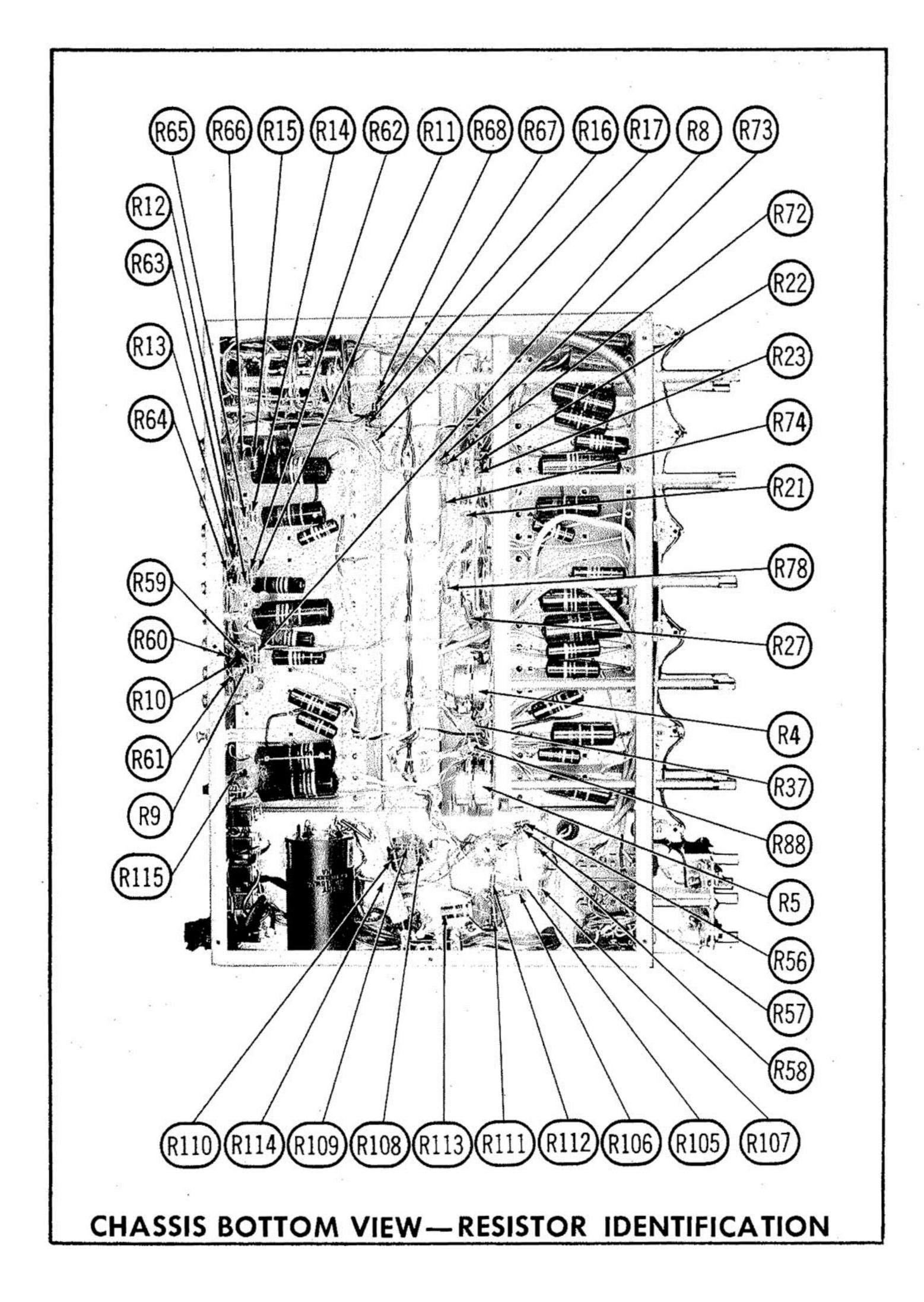
ITEM No.	TYPE		REPLACEMENT DATA							
		RATING	McINTOSH PART No.		LITTELFUSE PART No.		BUSS PART No.			
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER		
мз	3AG	1A 250V			312001 (3AG 1A 250V)	342001	AGC 1	нкр		

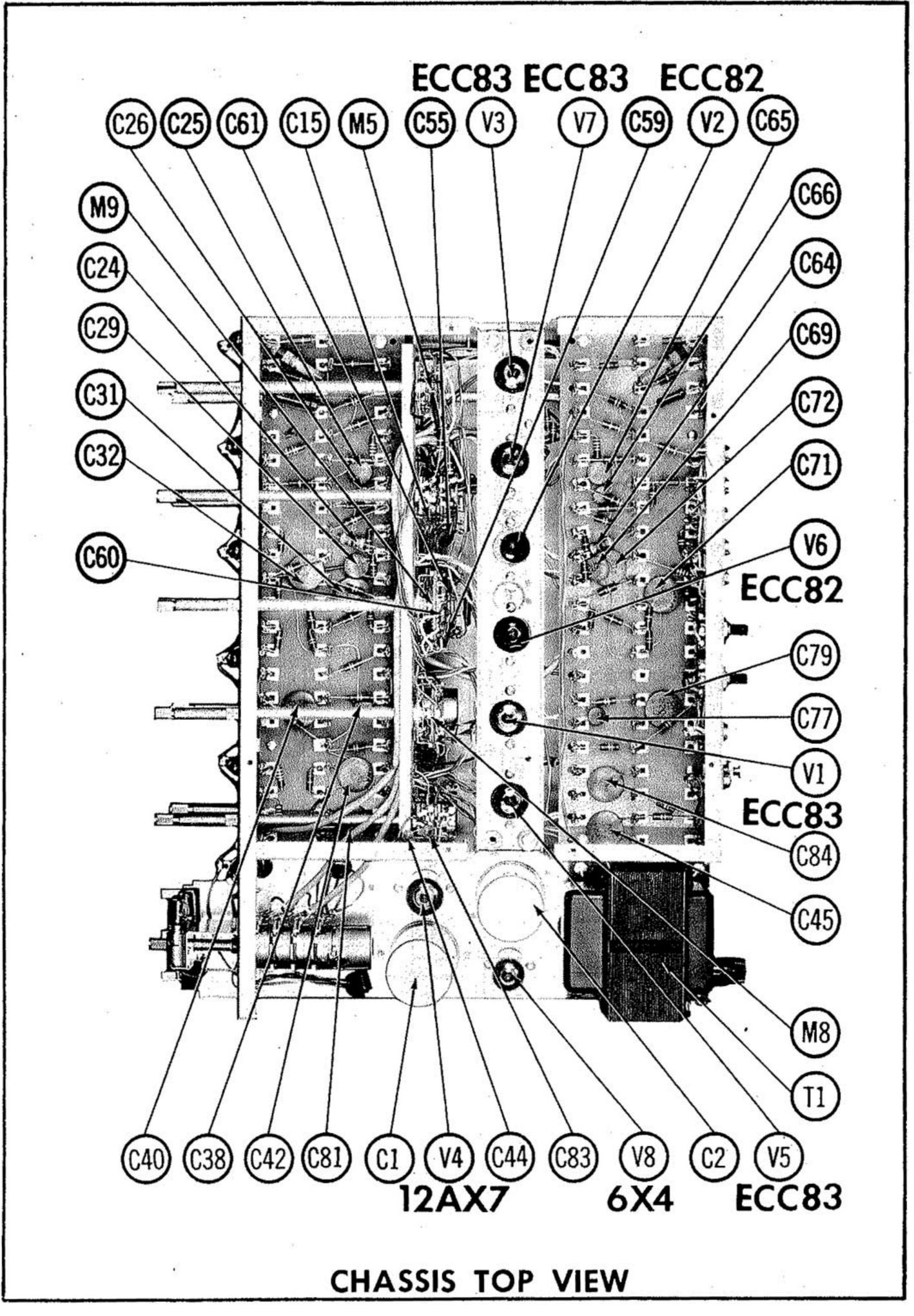
MISCELLANEOUS

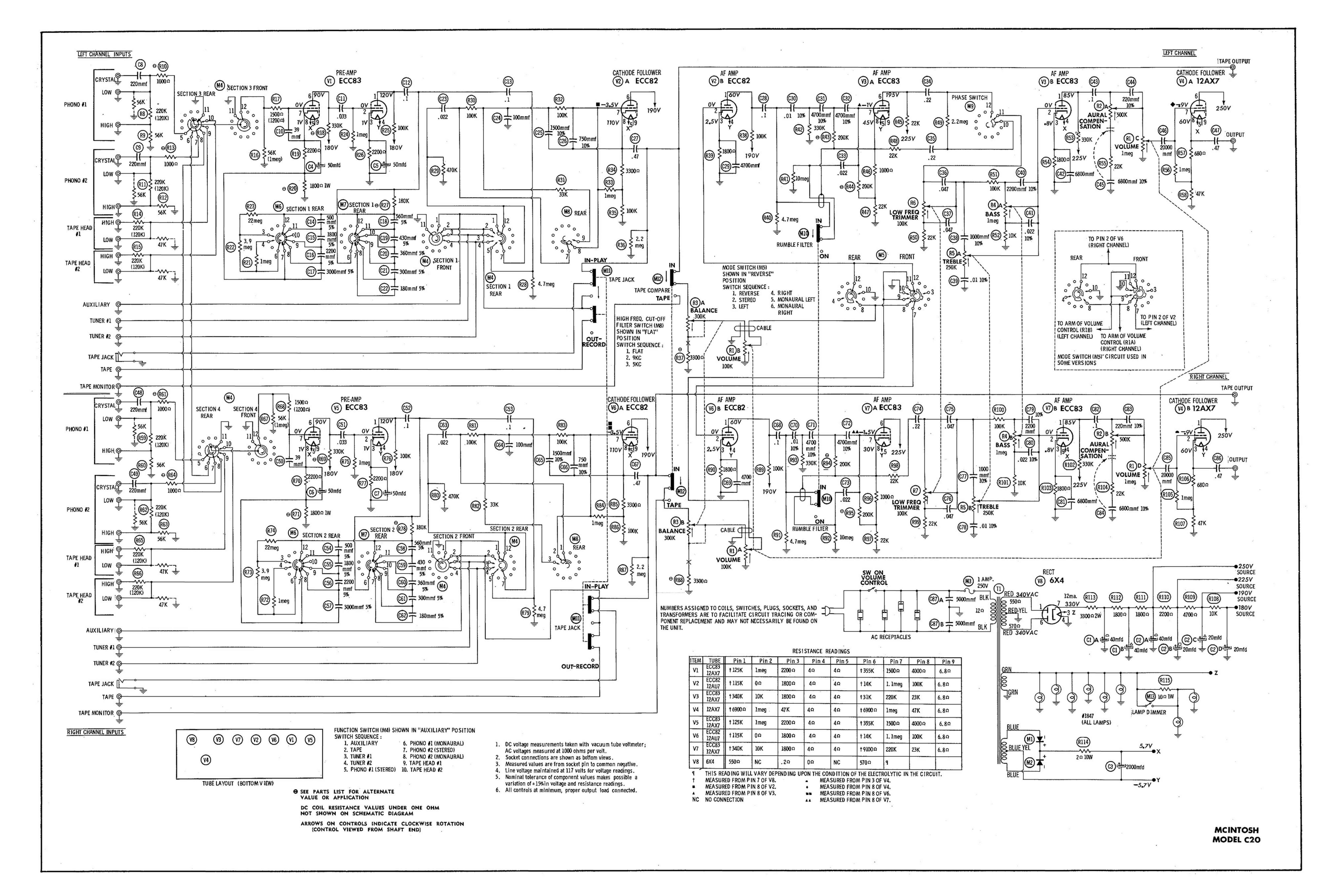
No.	PART NAME	McINTOSH PART No.	NOTES	
M4	Switch		Function (Input Selector)	
M5	Switch	l	Mode	
M6	Switch	\.	Bass Compensating	
M7	Switch		Treble Compensating	
M8	Switch		HF Cut-Off Filter	
M9	Switch	ł	Phase	
M10	Switch		Rumble Filter (Pushbutton Type)	
M11	Switch		Tape Jack (Pushbutton Type)	
M12	Switch	1	Tape Compare (Pushbutton Type)	
M13	Switch		Pilot Light Dimmer	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	
		1725-K (7½ Ft. Length)







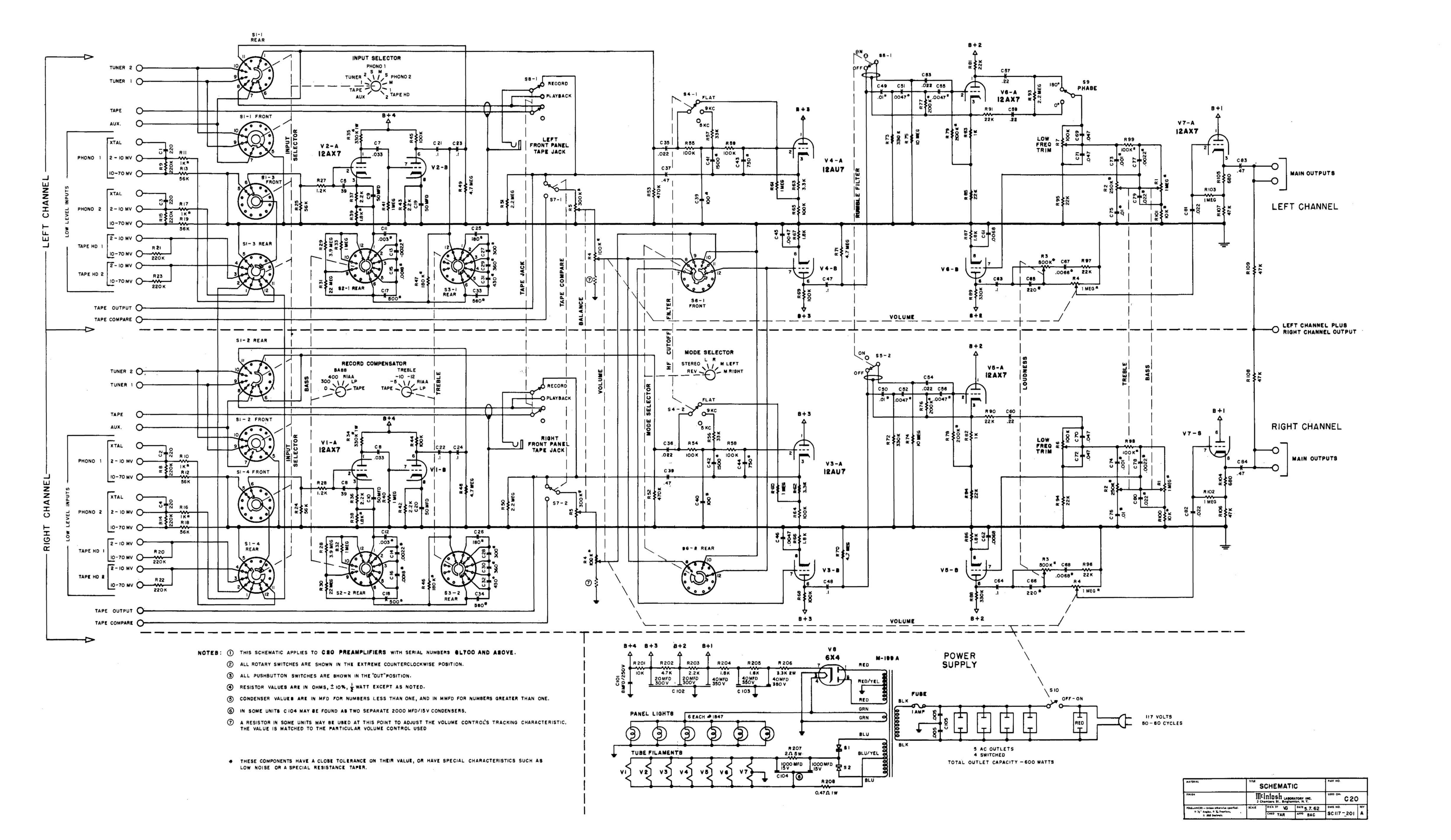


Table 1. C20 VOLTAGE AND RESISTANCE CHART (Schematic No. SC117-201)

•	<u> </u>	L	
Tube	Pin No.	DC Volts No. Signal	Resistance in Ohms Unit Off
12AX7	1	146	130K*
(V1)	2	0	1M
(1.1)	3	1.0	2.2K
	4	5.6	5
	5	-5.6	5
	6	110	360K*
	7	0	56K
	8 9	1.0 —	4K
12AX7	1	146	130K*
(V2)	2	0	1M
	3	1.0 5.6	2.2K
ļ	5	-5.6	5 5
	6	110	360K*
İ	7	0	56K
	8	1.0	4K
12AU7	9	64	120K*
(V3)	2	o	< 50
	3	2.4	1.8K
	4	5.6	5
i	5	-5.6	5
	6	198	14K*
1	/	62	1.1M
	8 9	120	100K
12AU7	1	64	120K*
(V4)	2	0	< 50
}	3	2.4	1.8K
1	4 5	5.6 -5.6	5 5
ì	6	198	14K*
3	7	62	1.1M
}	8	120	100K
1017	9		
12AX7 (V5)	2	104	330K* 110K
(,,,	3	.7	1.8K
1	4	5.6	5
ŀ	5	-5.6	5
	6	230	9K
	7	22	222K
	8 9	29 —	22K —
12AX7	1	104	330K*
(V6)	2	0	110K
}	3	.7 5.6	1.8K
7.	5	5.6 5.6	5 5
	6	200	31K*
	7	22	222K
1	8	29	22K
12AX7	9	250	7 / *
	1	250 20	7K* 1M
[4 /]	/ /		. 4171
(V7)	2 3		Production and the second seco
(*/)		70 5.6	47K . 5
(*/)	3 4 5	70 5.6 -5.6	47K 5 5
(*/)	3	70 5.6 -5.6 250	47K 5 5 7K*
()	3 4 5 6 7	70 5.6 -5.6 250 20	47K 5 5 7K* 1M
	3 4 5	70 5.6 -5.6 250	47K 5 5 7K*
6X4	3 4 5 6 7	70 5.6 -5.6 250 20	47K 5 5 7K* 1M
	3 4 5 6 7	70 5.6 -5.6 250 20 70 0 315 AC	47K 5 5 7K* 1M 47K 0
6X4	3 4 5 6 7	70 5.6 -5.6 250 20 70 0	47K 5 5 7K* 1M 47K 0
6X4	3 4 5 6 7	70 5.6 -5.6 250 20 70 0 315 AC	47K 5 5 7K* 1M 47K 0
6X4	3 4 5 6 7	70 5.6 -5.6 250 20 70 0 315 AC	47K 5 5 7K* 1M 47K 0

NOTES: 1. High impedance VTVM is used to measure operating voltages.

- 2. Resistance measured to gnd. (chassis)
- 3. * Denotes pin 7 of V8 grounded for this test.

Control positions for	tests	are	as	follows:	
MODE SELECTOR					

ODE SELECTOR	STEREO
BALANCE	0
PHASE	0
H.F. FILTER	FLAT
LOUDNESS	FLAT
INPUT SELECTOR	TAPE HD 2
BASS COMPENSATOR	0
TREBLE COMPENSATOR	TAPE
BASS	0
TREBLE	0
RUMBLE FILTER,	
TAPE JACK,	OUT
TAPE COMPARE	
VOLUME	ON, CCW
LOW FREQUENCY TRIM	0